APPENDIX D

WATERBODY FACT SHEETS
Proposed – Do Not List Recommendations
Some beneficial uses supported

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List of Creeks

Easkoot Creek

Benthic macroinvertebrate | Temperature | Dissolved Oxygen

Pine Gulch Creek

Benthic macroinvertebrate | Temperature | Dissolved Oxygen

Redwood Creek

Benthic macroinvertebrate | Temperature | Dissolved Oxygen

Rodeo Creek

Benthic macroinvertebrate | Temperature | Dissolved Oxygen

Tennessee Valley Creek

Benthic macroinvertebrate | Temperature | Dissolved Oxygen

Webb Creek

Benthic macroinvertebrate | Temperature | Dissolved Oxygen

Water Body Name:	**Easkoot Creek**
Water Body ID:	**CAR2013001220080626140517**
Water Body Type:	**River & Stream**
DECISION ID	**7744**
Pollutant:	**Benthic-Macroinvertebrate Bioassessments | Oxygen, Dissolved | Temperature, water**
Final Listing Decision:	**Decision in Progress**
Last Listing Cycle's Final Listing Decision:	New Decision
Revision Status	Original
Impairment from Pollutant or Pollution:	Pollutant

Weight of Evidence:

This waterbody is being considered for listing under sections 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status. Three lines of evidence are available in the administrative record to assess this water body.

Based on the readily available data for this waterbody, the weight of evidence indicates that there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:

1. The data used satisfy the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfy the data quantity requirements of section 6.1.5 of the Policy.
3. Dissolved oxygen and temperature measurements exceeded the Basin Plan objectives for waters designated as cold water habitat at 1 of 6 continuous deployments and this does not exceed the allowable frequency listed in Table 3.2 of the Listing Policy. In addition, the macroinvertebrate data indicated good water quality conditions.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

RWQCB Board Decision / Staff Recommendation:

After review of the available data and information, Water Board staff concludes that this waterbody supports the beneficial use of aquatic life and meets applicable water quality standards for dissolved oxygen and temperature. Therefore, the water body-pollutant combination should not be placed on the section 303(d) list.

Lines of Evidence (LOEs) for Decision ID 7744

LOE ID:	5722
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None

Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	6
Number of Exceedances:	1
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at the Easkoot Creek watershed as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at two locations. The estimated 7-day mean temperatures ranged from 10.64°C to 15.81 °C and varied with season and location. The 14.8 °C criterion for coho salmon was exceeded in 1 out of 6 continuous temperature deployments during the dry summer season at the downstream reach of the creek. The 17 °C criterion for steelhead was never exceeded.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	Temperature objectives for enclosed bays and estuaries are specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions to the plan. In addition, the following temperature objectives apply to surface waters: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8^{o} C) above natural receiving water temperature.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Sullivan et al. (2000) reviewed a wide range of studies incorporating information from laboratory-based research, field observations, and risk assessment approaches and developed criteria for assessing temperature risk to aquatic life. The 7-day mean temperature (maximum value of the 7-day moving average of the daily mean temperature) of 14.8°C was established as the upper threshold criterion for coho salmon and 17.0°C for steelhead trout. The risk assessment approach used by Sullivan et al. (2000) suggests that temperatures exceeding the above thresholds will cause 10% reduction in average growth compared to optimal conditions.
Guideline Reference:	An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria
Spatial Representation:	Temperature was measured at two sites. One site was located on the mainstem of Easkoot Creek just above the tidal influence and one on Fitzhenry Creek a small tributary. The high temperatures were detected at the downstream location in Easkoot Creek.
Temporal Representation:	Concurrent continuous measurements were conducted at both monitoring locations. Temperature was recorded at 15 minute intervals over 6 to 7 days during spring (April 2005), summer dry season (August 2005), and winter wet season (January 2006).
Environmental Conditions:	

QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5852
Pollutant:	Benthic-Macroinvertebrate Bioassessments
LOE Subgroup:	Population/Community Degradation
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	2
Number of Exceedances:	0
Data and Information Type:	Benthic macroinvertebrate surveys
Data Used to Asses Water Quality:	Benthic macroinvertebrates were sampled from two sites in the Easkoot Creek watershed in April 2005 by the SWAMP program. Benthic macroinvertebrate assemblage metrics were similar to values observed at reference sites in perennial creeks and indicated good conditions. Taxa richness score was 26 and % sensitive EPT was 14.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Benthic macroinvertebrate assemblage metric scores that are within the range of scores for minimally disturbed reference sites indicate no substantial alterations in community ecology. Taxa richness values at reference sites sampled by the SFBRWQCB SWAMP program between 2001 and 2003 ranged from 28 to 59. Reference conditions determined for perennial streams such as Easkoot Creek, usually exhibit taxa richness > 38 and % sensitive EPT > 44. A perennial stream could be described as in - excellent condition - if there is no difference between the metrics measured at the site and those established for reference sites. A perennial stream will be described as in - good condition - if the site metrics indicate minor loss of bio-integrity but still a good structure and function, and sensitive species are present in abundance.
Guideline Reference:	Water Quality Monitoring and Bioassessment in Nine San Francisco Bay Region Watersheds: Walker Creek, Lagunitas Creek, San Leandro Creek, Wildcat Creek/San Pablo Creek, Suisun Creek, Arroyo Las Positas, Pescadero Creek/Butano Creek, San Gregorio Creek, and Stevens Creek/Permanente Creek. Oakland, CA: Surface Water Ambient Monitoring Program, San Francisco Bay

	Regional Water Quality Control Board
Spatial Representation:	Benthic macroinvertebrates were measured at two sites. One site was located on the mainstem of Easkoot Creek just above the tidal influence and one on Fitzhenry Creek - a small tributary.
Temporal Representation:	Benthic macroinvertebrates were sampled in April, 2005.
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).
QAPP Information Reference(s):	

LOE ID:	5723
Pollutant:	Oxygen, Dissolved
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	6
Number of Exceedances:	1
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Comprehensive water quality assessment was conducted at the Easkoot Creek watershed as part of SWAMP assessment in 2005. Continuous field monitoring of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at two locations. The 7 day average minimum concentrations of dissolved oxygen ranged from 6.33 to 11.15 mg/L and varied with season. Minimum dissolved oxygen levels fell below the objective of 7 mg/L only once during the dry season in August 2005. During that period minimum values of DO ranged from 5.1 to 6.94 mg/L.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	The numeric water quality objective for dissolved oxygen is 7.0 mg/L minimum for waters designated as cold water habitat. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Spatial Representation:	Dissolved oxygen was measured at two sites. One site was located on the mainstem of Easkoot Creek just above the tidal influence and one on Fitzhenry Creek a small tributary. The lowest dissolved oxygen levels were measured at the downstream location in Easkoot Creek.

Temporal Representation:	At both locations the SWAMP Program performed continuous monitoring of dissolved oxygen at 15 minute intervals lasting 6 to 7 days during spring (April 2005), summer dry season (August 2005), and winter wet season (January 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

Water Body Name:	**Pine Gulch Creek**
Water Body ID:	**CAR2013001120080624164835**
Water Body Type:	**River & Stream**
DECISION ID	**7745**

Pollutant:	**Benthic-Macroinvertebrate Bioassessments | Oxygen, Dissolved | Temperature, water**
Final Listing Decision:	**Decision in Progress**
Last Listing Cycle's Final Listing Decision:	New Decision
Revision Status	Original
Impairment from Pollutant or Pollution:	Pollutant

Weight of Evidence:

This waterbody is being considered for listing under sections 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status. Three lines of evidence are available in the administrative record to assess this water body.

Based on the readily available data for this waterbody, the weight of evidence indicates that there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:

1. The data used satisfy the data quality requirements of section 6.1.4 of the Policy.

2. The data used satisfy the data quantity requirements of section 6.1.5 of the Policy.

3. Dissolved oxygen measurements did not exceeded the Basin Plan objectives for waters designated as cold water habitat. Temperature measurements at 1 out of 6 continuous deployments exceeded the 14.8 °C at and this does not exceed the allowable frequency listed in Table 3.2 of the Listing Policy. In addition, the macroinvertebrate data indicated good water quality conditions.

4.Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

RWQCB Board Decision / Staff Recommendation: After review of the available data and information, Water Board staff concludes that this waterbody supports the beneficial use of aquatic life and meets applicable water quality standards for dissolved oxygen and temperature. Therefore, the water body-pollutant combination should not be placed on the section 303(d) list.

Lines of Evidence (LOEs) for Decision ID 7745

LOE ID:	5719
Pollutant:	Oxygen, Dissolved
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None

Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	6
Number of Exceedances:	0
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at the Pine Gulch watershed as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at two locations. The 7 day average minimum concentrations of dissolved oxygen were between 9.01 and 9.87 mg/L during dry season, 10.0 - 10.48 mg/L during spring season, and 11.24 - 11.58 mg/L during winter wet season. All DO measurements met the water quality objective of 7 mg/L.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	The numeric water quality objective for dissolved oxygen is 7.0 mg/L minimum for waters designated as cold water habitat. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Spatial Representation:	Dissolved oxygen was measured at two sites located on the mainstem of Pine Gulch Creek.
Temporal Representation:	At all monitoring locations the SWAMP Program performed concurrent continuous measurements of dissolved oxygen at 15 minute intervals lasting 6 to 7 days. The measurements were conducted during spring (April 2005), summer dry season (August 2005), and winter wet season (January/February 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5853
Pollutant:	Benthic-Macroinvertebrate Bioassessments
LOE Subgroup:	Population/Community Degradation
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	2
Number of Exceedances:	0
Data and Information Type:	Benthic macroinvertebrate surveys
Data Used to Asses Water	Benthic macroinvertebrates were sampled from two sites in the Pine Gulch Creek

Quality:	watershed in April 2005 by the SFBRWQCB SWAMP program. Benthic macroinvertebrate assemblage metrics were similar to values observed at reference sites in perennial creeks and indicated good conditions. Taxa richness score ranged from 34 to 36 and % sensitive EPT were 30 to 33.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Benthic macroinvertebrate assemblage metric scores that are within the range of scores for minimally disturbed reference sites indicate no substantial alterations in community ecology. Taxa richness values at reference sites sampled by the SFBRWQCB SWAMP program between 2001 and 2003 ranged from 28 to 59. Reference conditions determined for perennial streams such as Pine Gulch Creek, usually exhibit taxa richness > 38 and % sensitive EPT > 44. A perennial stream could be described as in - excellent condition - if there is no difference between the metrics measured at the site and those established for reference sites. A perennial stream will be described as in - good condition - if the site metrics indicate minor loss of bio-integrity but still a good structure and function, and sensitive species are present in abundance.
Guideline Reference:	Water Quality Monitoring and Bioassessment in Nine San Francisco Bay Region Watersheds: Walker Creek, Lagunitas Creek, San Leandro Creek, Wildcat Creek/San Pablo Creek, Suisun Creek, Arroyo Las Positas, Pescadero Creek/Butano Creek, San Gregorio Creek, and Stevens Creek/Permanente Creek. Oakland, CA: Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board
Spatial Representation:	Benthic macroinvertebrates were measured at two sites located on the mainstem of Pine Gulch Creek.
Temporal Representation:	Benthic macroinvertebrates were sampled once in April 2005.
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5720
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat

Number of Samples:	6
Number of Exceedances:	1
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at the Pine Gulch watershed as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at two locations. The measured temperatures ranged from 5.73°C to 29.32 °C and varied with season and location. The 14.8 °C criterion for coho salmon was exceeded in 1 out of 6 continuous temperature deployments and the 17 °C criterion for steelhead was never exceeded.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	Temperature objectives for enclosed bays and estuaries are specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions to the plan. In addition, the following temperature objectives apply to surface waters: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8^{o} C) above natural receiving water temperature.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Sullivan et al. (2000) reviewed a wide range of studies incorporating information from laboratory-based research, field observations, and risk assessment approaches and developed criteria for assessing temperature risk to aquatic life. The 7-day mean temperature (maximum value of the 7-day moving average of the daily mean temperature) of 14.8°C was established as the upper threshold criterion for coho salmon and 17.0°C for steelhead trout. The risk assessment approach used by Sullivan et al. (2000) suggests that temperatures exceeding the above thresholds will cause 10% reduction in average growth compared to optimal conditions.
Guideline Reference:	An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria
Spatial Representation:	Temperature was measured at two sites.
Temporal Representation:	Concurrent continuous measurements were conducted at both monitoring locations. Temperature was recorded at 15 minute intervals over 2 to 11 days during spring (April 2005), summer dry season (August 2005), and winter wet season (January/February 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

Water Body Name:	**Redwood Creek (Marin County)**
Water Body ID:	**CAR2013001320080714110732**
Water Body Type:	**River & Stream**
DECISION ID	**7746**

Pollutant:	**Benthic-Macroinvertebrate Bioassessments | Oxygen, Dissolved | Temperature, water**
Final Listing Decision:	**Decision in Progress**
Last Listing Cycle's Final Listing Decision:	New Decision
Revision Status	Original
Impairment from Pollutant or Pollution:	Pollutant

Weight of Evidence:

This waterbody is being considered for listing under sections 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status. Three lines of evidence are available in the administrative record to assess this water body.

Based on the readily available data for this waterbody, the weight of evidence indicates that there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:

1. The data used satisfy the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfy the data quantity requirements of section 6.1.5 of the Policy.
3. Dissolved oxygen and temperature measurements exceeded the Basin Plan objectives for waters designated as cold water habitat at 1 of 12 continuous deployments and this does not exceed the allowable frequency listed in Table 3.2 of the Listing Policy. In addition, the macroinvertebrate data indicated excellent to good water quality conditions.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

RWQCB Board Decision / Staff Recommendation:

After review of the available data and information, Water Board staff concludes that this waterbody supports the beneficial use of aquatic life and meets applicable water quality standards for dissolved oxygen and temperature. Therefore, the water body-pollutant combination should not be placed on the section 303(d) list.

Lines of Evidence (LOEs) for Decision ID 7746

LOE ID:	5752
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None

Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	12
Number of Exceedances:	1
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Comprehensive water quality assessment was conducted at the Redwood Creek watershed as part of SWAMP assessment in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at four locations. The estimated 7-day mean temperatures ranged from 12.08°C to 15.47 °C and varied with season and location. The 14.8 °C criterion for coho salmon was exceeded in 1 out of 12 continuous temperature deployments during the dry summer season at the downstream reach of the creek. The 17 °C criterion for steelhead was never exceeded.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	Temperature objectives for enclosed bays and estuaries are specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions to the plan. In addition, the following temperature objectives apply to surface waters: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8^{o} C) above natural receiving water temperature.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Sullivan et al. (2000) reviewed a wide range of studies incorporating information from laboratory-based research, field observations, and risk assessment approaches and developed criteria for assessing temperature risk to aquatic life. The 7-day mean temperature (maximum value of the 7-day moving average of the daily mean temperature) of 14.8°C was established as the upper threshold criterion for coho salmon and 17.0°C for steelhead trout. The risk assessment approach used by Sullivan et al. (2000) suggests that temperatures exceeding the above thresholds will cause 10% reduction in average growth compared to optimal conditions.
Guideline Reference:	An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria
Spatial Representation:	Temperature was measured at four sites. Three of these sites were located on the mainstem of Redwood Creek, with the remaining site located on Green Gulch - a small tributary.
Temporal Representation:	Concurrent continuous measurements were conducted at both monitoring locations. Temperature was recorded at 15 minute intervals over 6 to 12 days during late spring (May 2005), summer dry season (August 2005), and winter wet season (January/February 2006).
Environmental Conditions:	

QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5854
Pollutant:	Benthic-Macroinvertebrate Bioassessments
LOE Subgroup:	Population/Community Degradation
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	4
Number of Exceedances:	0
Data and Information Type:	Benthic macroinvertebrate surveys
Data Used to Asses Water Quality:	Benthic macroinvertebrates were sampled from four sites in the Redwood Creek watershed in April 2005 by the SFBRWQCB SWAMP program. Benthic macroinvertebrate assemblage metrics were similar to values observed at reference sites in perennial creeks and indicated excellent to good conditions. Taxa richness score ranged from 32 to 36 and % sensitive EPT were 30 to 33.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Benthic macroinvertebrate assemblage metric scores that are within the range of scores for minimally disturbed reference sites indicate no substantial alterations in community ecology. Taxa richness values at reference sites sampled by the SFBRWQCB SWAMP program between 2001 and 2003 ranged from 28 to 59. Reference conditions determined for perennial streams such as Redwood Creek, usually exhibit taxa richness > 38 and % sensitive EPT > 44. A perennial stream could be described as in - excellent condition - if there is no difference between the metrics measured at the site and those established for reference sites. A perennial stream will be described as in - good condition - if the site metrics indicate minor loss of bio-integrity but still a good structure and function, and sensitive species are present in abundance.
Guideline Reference:	Water Quality Monitoring and Bioassessment in Nine San Francisco Bay Region Watersheds: Walker Creek, Lagunitas Creek, San Leandro Creek, Wildcat Creek/San Pablo Creek, Suisun Creek, Arroyo Las Positas, Pescadero Creek/Butano Creek, San Gregorio Creek, and Stevens Creek/Permanente Creek. Oakland, CA: Surface Water Ambient Monitoring Program, San Francisco Bay

	Regional Water Quality Control Board
Spatial Representation:	Benthic macroinvertebrates were sampled from four sites. Three of these sites were located on the mainstem of Redwood Creek, with the remaining site located on Green Gulch - a small tributary.
Temporal Representation:	All four sites were sampled for benthic macroinvertebrates in April 2005.
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5755
Pollutant:	Oxygen, Dissolved
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	12
Number of Exceedances:	1
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Comprehensive water quality assessment was conducted at the Redwood Creek watershed as part of SWAMP assessment in 2005. Continuous field monitoring of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at four locations. The 7 day average minimum concentrations of dissolved oxygen were between 6.74 and 9.81 mg/L during dry season, 9.03 - 10.72 during spring season, and 10.38 - 11.8 during winter wet season. Minimum dissolved oxygen levels fell below the objective of 7 mg/L only once during the dry season in August 2005. The below objective concentrations were detected in Green Gulch, one out of 4 monitoring points in the Redwood Creek watershed, located just upstream from the confluence with Redwood Creek. During that period minimum values of DO ranged from 4.74 to 7.95 mg/L.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	The numeric water quality objective for dissolved oxygen is 7.0 mg/L minimum for waters designated as cold water habitat. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Spatial Representation:	Dissolved oxygen was measured at four sites. Three of these sites were located on the mainstem of Redwood Creek, with the remaining site located on Green Gulch -

	a small tributary.
Temporal Representation:	At all monitoring locations the SWAMP Program performed concurrent continuous measurements of dissolved oxygen at 15 minute intervals lasting 6 to 12 days. The measurements were conducted during late spring (May 2005), summer dry season (August 2005), and winter wet season (February 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

Water Body Name:	**Rodeo Creek (Marin County)**
Water Body ID:	**CAR2013001420080714111405**
Water Body Type:	**River & Stream**
DECISION ID	**7749**

Pollutant:	**Benthic-Macroinvertebrate Bioassessments | Oxygen, Dissolved | Temperature, water**
Final Listing Decision:	**Do Not List on 303(d) list (TMDL required list)**
Last Listing Cycle's Final Listing Decision:	New Decision
Revision Status	Original
Impairment from Pollutant or Pollution:	Pollutant

Weight of Evidence:

This waterbody is being considered for listing under sections 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status. Three lines of evidence are available in the administrative record to assess this water body.

Based on the readily available data for this waterbody, the weight of evidence indicates that there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:

1. The data used satisfy the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfy the data quantity requirements of section 6.1.5 of the Policy.
3. Temperature and dissolved oxygen measurements at all 3 continuous deployments did not exceed the applicable water quality objectives for waters designated as cold water habitat and this does not exceed the allowable frequency listed in Table 3.2 of the Listing Policy. In addition, the macroinvertebrate data indicated good water quality conditions.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

RWQCB Board Decision / Staff Recommendation:

After review of the available data and information, Water Board staff concludes that this waterbody supports the beneficial use of aquatic life and meets applicable water quality standards for dissolved oxygen and temperature. Therefore, the water body-pollutant combination should not be placed on the section 303(d) list.

Lines of Evidence (LOEs) for Decision ID 7749

LOE ID:	5759
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Water

Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	3
Number of Exceedances:	0
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	A water quality assessment was conducted at Rodeo Creek as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at one location. The estimated 7-day mean temperature was 13.43 in spring, 13.27°C during dry summer season, and 10.47 °C during wet season. The 14.8 °C criterion for coho salmon and the 17 °C criterion for steelhead were never exceeded.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	Temperature objectives for enclosed bays and estuaries are specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions to the plan. In addition, the following temperature objectives apply to surface waters: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8^{o} C) above natural receiving water temperature.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Sullivan et al. (2000) reviewed a wide range of studies incorporating information from laboratory-based research, field observations, and risk assessment approaches and developed criteria for assessing temperature risk to aquatic life. The 7-day mean temperature (maximum value of the 7-day moving average of the daily mean temperature) of 14.8°C was established as the upper threshold criterion for coho salmon and 17.0°C for steelhead trout. The risk assessment approach used by Sullivan et al. (2000) suggests that temperatures exceeding the above thresholds will cause 10% reduction in average growth compared to optimal conditions.
Guideline Reference:	An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria
Spatial Representation:	Temperature was measured at one site located in the Golden Gate National Recreation Area upstream from Rodeo Lake.
Temporal Representation:	Temperature was recorded at 15 minute intervals over 9 to 21 days during late spring (June 2005), summer dry season (September 2005), and winter wet season (February 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5857
Pollutant:	Benthic-Macroinvertebrate Bioassessments
LOE Subgroup:	Population/Community Degradation
Matrix:	Water
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	2
Number of Exceedances:	0
Data and Information Type:	Benthic macroinvertebrate surveys
Data Used to Asses Water Quality:	Benthic macroinvertebrates were sampled from two sites in the Rodeo Creek watershed in May 2005 by the SFBRWQCB SWAMP program. Benthic macroinvertebrate assemblage metrics were similar to values observed at reference sites in perennial creeks and indicated good conditions. Taxa richness score ranged from 22 to 28 and % sensitive EPT were 37 to 38.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Benthic macroinvertebrate assemblage metric scores that are within the range of scores for minimally disturbed reference sites indicate no substantial alterations in community ecology. Taxa richness values at reference sites sampled by the SFBRWQCB SWAMP program between 2001 and 2003 ranged from 28 to 59 (SFBRWQCB 2007). Reference conditions determined for perennial streams such as Rodeo Creek, usually exhibit taxa richness > 38 and % sensitive EPT > 44. A perennial stream could be described as in - excellent condition - if there is no difference between the metrics measured at the site and those established for reference sites. A perennial stream will be described as in - good condition - if the site metrics indicate minor loss of bio-integrity but still a good structure and function, and sensitive species are present in abundance.
Guideline Reference:	Water Quality Monitoring and Bioassessment in Nine San Francisco Bay Region Watersheds: Walker Creek, Lagunitas Creek, San Leandro Creek, Wildcat Creek/San Pablo Creek, Suisun Creek, Arroyo Las Positas, Pescadero Creek/Butano Creek, San Gregorio Creek, and Stevens Creek/Permanente Creek. Oakland, CA: Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board
Spatial Representation:	Benthic macroinvertebrates were sampled from two sites. One site was located on

	the mainstem of Rodeo Creek upstream from the confluence with Gerbode Creek, a tributary that was also sampled.
Temporal Representation:	Benthic macroinvertebrates were sampled in May 2005.
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5760
Pollutant:	Oxygen, Dissolved
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	3
Number of Exceedances:	0
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at Rodeo Creek as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at one location. The 7 day average minimum concentration of dissolved oxygen was 8.83 mg/L during dry season, 9.08 mg/L during spring season, and 11.03 mg/L during winter wet season. All DO measurements met the water quality objective of 7 mg/L.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	The numeric water quality objective for dissolved oxygen is 7.0 mg/L minimum for waters designated as cold water habitat. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Spatial Representation:	Dissolved oxygen concentrations were measured at one site located in the Golden Gate National Recreation Area upstream from Rodeo Lake.
Temporal Representation:	DO was recorded at 15 minute intervals over 9 to 21 days during late spring (June 2005), summer dry season (September 2005), and winter wet season (February 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

Water Body Name:	**Tennessee Valley Creek**
Water Body ID:	**CAR2013001420080626103904**
Water Body Type:	**River & Stream**
DECISION ID	**7747**

Pollutant:	**Benthic-Macroinvertebrate Bioassessments | Oxygen, Dissolved | Temperature, water**
Final Listing Decision:	**Decision in Progress**
Last Listing Cycle's Final Listing Decision:	New Decision
Revision Status	Original
Impairment from Pollutant or Pollution:	Pollutant

Weight of Evidence:

This waterbody is being considered for listing under sections 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status. Three lines of evidence are available in the administrative record to assess this water body.

Based on the readily available data for this waterbody, the weight of evidence indicates that there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:

1. The data used satisfy the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfy the data quantity requirements of section 6.1.5 of the Policy.
3. Dissolved oxygen and temperature measurements did not exceed the Basin Plan objectives for waters designated as cold water habitat and this does not exceed the allowable frequency listed in Table 3.2 of the Listing Policy. In addition, the macroinvertebrate data indicated excellent water quality conditions.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

RWQCB Board Decision / Staff Recommendation:

After review of the available data and information, Water Board staff concludes that this waterbody supports the beneficial use of aquatic life and meets applicable water quality standards for dissolved oxygen and temperature. Therefore, the water body-pollutant combination should not be placed on the section 303(d) list.

Lines of Evidence (LOEs) for Decision ID 7747

LOE ID:	5717
Pollutant:	Oxygen, Dissolved
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None

Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	3
Number of Exceedances:	0
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at Tennessee Valley Creek as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at one location. The 7 day average minimum concentration of dissolved oxygen was 8 mg/L during dry season, 10.26 mg/L during spring season, and 10.77 mg/L during winter wet season. All DO measurements met the water quality objective of 7 mg/L.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	The numeric water quality objective for dissolved oxygen is 7.0 mg/L minimum for waters designated as cold water habitat. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Spatial Representation:	Dissolved oxygen concentrations were measured at one site located in the NW part of the Golden Gate National Recreation Area.
Temporal Representation:	DO was recorded at 15 minute intervals over 6 to 7 days during spring (April 2005), summer dry season (August 2005), and winter wet season (January 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5855
Pollutant:	Benthic-Macroinvertebrate Bioassessments
LOE Subgroup:	Population/Community Degradation
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	1
Number of Exceedances:	0
Data and Information Type:	Benthic macroinvertebrate surveys
Data Used to Asses Water	Benthic macroinvertebrates were sampled from one site in the Tennessee Valley

Quality:	Creek watershed in April 2005 by the SFBRWQCB SWAMP program. The flow in the creek is intermittent. Benthic macroinvertebrate assemblage metrics were no different to values observed at reference sites in ephemeral creeks and indicated excellent conditions. Taxa richness score and % sensitive EPT were both 27 and the combined Human Disturbance Index was 0.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Benthic macroinvertebrate assemblage metric scores that are within the range of scores for minimally disturbed reference sites indicate no substantial alterations in community ecology. Taxa richness values at reference sites sampled by the SFBRWQCB SWAMP program between 2001 and 2003 ranged from 28 to 59. Reference conditions determined for ephemeral streams, such as Tennessee Valley Creek, usually exhibit taxa richness > 28 and % sensitive EPT > 21. An ephemeral stream could be described as in - excellent condition - if there is no difference between the metrics measured at the site and those established for reference sites. An ephemeral stream will be described as in - good condition - if the site metrics indicate minor loss of bio-integrity but still a good structure and function, and sensitive species are present in abundance.
Guideline Reference:	Water Quality Monitoring and Bioassessment in Nine San Francisco Bay Region Watersheds: Walker Creek, Lagunitas Creek, San Leandro Creek, Wildcat Creek/San Pablo Creek, Suisun Creek, Arroyo Las Positas, Pescadero Creek/Butano Creek, San Gregorio Creek, and Stevens Creek/Permanente Creek. Oakland, CA: Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board
Spatial Representation:	Benthic macroinvertebrates were sampled from one site located in the NW part of the Golden Gate National Recreation Area.
Temporal Representation:	Benthic macroinvertebrates were sampled once in April, 2005.
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5718
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None

Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	3
Number of Exceedances:	0
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at Tennessee Valley Creek as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at one location. The estimated 7-day mean temperature was 12.52°C in spring, 14.18°C during dry summer season, and 10.3 °C during wet season. The 14.8 °C criterion for coho salmon and the 17 °C criterion for steelhead were never exceeded.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	Temperature objectives for enclosed bays and estuaries are specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions to the plan. In addition, the following temperature objectives apply to surface waters: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8^{o} C) above natural receiving water temperature.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Sullivan et al. (2000) reviewed a wide range of studies incorporating information from laboratory-based research, field observations, and risk assessment approaches and developed criteria for assessing temperature risk to aquatic life. The 7-day mean temperature (maximum value of the 7-day moving average of the daily mean temperature) of 14.8°C was established as the upper threshold criterion for coho salmon and 17.0°C for steelhead trout. The risk assessment approach used by Sullivan et al. (2000) suggests that temperatures exceeding the above thresholds will cause 10% reduction in average growth compared to optimal conditions.
Guideline Reference:	An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria
Spatial Representation:	Temperature was measured at one site located in the NW part of the Golden Gate National Recreation Area.
Temporal Representation:	Temperature was recorded at 15 minute intervals over 6 to 7 days during spring (April 2005), summer dry season (August 2005), and winter wet season (January 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

Water Body Name:	**Webb Creek**
Water Body ID:	**CAR2013001220080626103512**
Water Body Type:	**River & Stream**
DECISION ID	**7748**

Pollutant:	**Benthic-Macroinvertebrate Bioassessments | Oxygen, Dissolved | Temperature, water**
Final Listing Decision:	**Decision in Progress**
Last Listing Cycle's Final Listing Decision:	New Decision
Revision Status	Original
Impairment from Pollutant or Pollution:	Pollutant

Weight of Evidence:

This waterbody is being considered for listing under sections 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status. Three lines of evidence are available in the administrative record to assess this water body.

Based on the readily available data for this waterbody, the weight of evidence indicates that there is sufficient justification against placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:

1. The data used satisfy the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfy the data quantity requirements of section 6.1.5 of the Policy.
3. Temperature and dissolved oxygen measurements at all 3 continuous deployments did not exceed the applicable water quality objectives for waters designated as cold water habitat and this does not exceed the allowable frequency listed in Table 3.2 of the Listing Policy. In addition, the macroinvertebrate data indicated excellent water quality conditions.
4.Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

RWQCB Board Decision / Staff Recommendation: After review of the available data and information, Water Board staff concludes that this waterbody supports the beneficial use of aquatic life and meets applicable water quality standards for dissolved oxygen and temperature. Therefore, the water body-pollutant combination should not be placed on the section 303(d) list.

Lines of Evidence (LOEs) for Decision ID 7748

LOE ID: 5715

Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None

Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	3
Number of Exceedances:	0
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at Webb Creek as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at one location. The estimated 7-day mean temperature was 11.79°C in spring, 13.69°C during dry summer season, and 10.51 °C during wet season. The 14.8 °C criterion for coho salmon and the 17 °C criterion for steelhead were never exceeded.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	Temperature objectives for enclosed bays and estuaries are specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions to the plan. In addition, the following temperature objectives apply to surface waters: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8°C) above natural receiving water temperature.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Sullivan et al. (2000) reviewed a wide range of studies incorporating information from laboratory-based research, field observations, and risk assessment approaches and developed criteria for assessing temperature risk to aquatic life. The 7-day mean temperature (maximum value of the 7-day moving average of the daily mean temperature) of 14.8°C was established as the upper threshold criterion for coho salmon and 17.0°C for steelhead trout. The risk assessment approach used by Sullivan et al. (2000) suggests that temperatures exceeding the above thresholds will cause 10% reduction in average growth compared to optimal conditions.
Guideline Reference:	An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria
Spatial Representation:	Temperature was measured at one site located just upstream from Hwy 1.
Temporal Representation:	Temperature was recorded at 15 minute intervals over 6 to 7 days during spring (April 2005), summer dry season (August 2005), and winter wet season (January 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID: 5856

Pollutant:	Benthic-Macroinvertebrate Bioassessments
LOE Subgroup:	Population/Community Degradation
Matrix:	Water
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	1
Number of Exceedances:	0
Data and Information Type:	Benthic macroinvertebrate surveys
Data Used to Asses Water Quality:	Benthic macroinvertebrates were sampled from one site in the Webb Creek watershed in April 2005 by the SFBRWQCB SWAMP program. Benthic macroinvertebrate assemblage metrics were no different to values observed at reference sites in perennial creeks and indicated excellent conditions. Taxa richness score was 39 and % sensitive EPT was 26.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Evaluation Guideline:	Benthic macroinvertebrate assemblage metric scores that are within the range of scores for minimally disturbed reference sites indicate no substantial alterations in community ecology. Taxa richness values at reference sites sampled by the SFBRWQCB SWAMP program between 2001 and 2003 ranged from 28 to 59. Reference conditions determined for perennial streams such as Webb Creek, usually exhibit taxa richness > 38 and % sensitive EPT > 44. A perennial stream could be described as in - excellent condition - if there is no difference between the metrics measured at the site and those established for reference sites. A perennial stream will be described as in - good condition - if the site metrics indicate minor loss of bio-integrity but still a good structure and function, and sensitive species are present in abundance.
Guideline Reference:	Water Quality Monitoring and Bioassessment in Nine San Francisco Bay Region Watersheds: Walker Creek, Lagunitas Creek, San Leandro Creek, Wildcat Creek/San Pablo Creek, Suisun Creek, Arroyo Las Positas, Pescadero Creek/Butano Creek, San Gregorio Creek, and Stevens Creek/Permanente Creek. Oakland, CA: Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board
Spatial Representation:	Benthic macroinvertebrates were sampled from one site located upstream from Hwy 1.
Temporal Representation:	Benthic macroinvertebrates were sampled once in April, 2005.
Environmental Conditions:	

QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).

LOE ID:	5716
Pollutant:	Oxygen, Dissolved
LOE Subgroup:	Pollutant-Water
Matrix:	Water
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	3
Number of Exceedances:	0
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Asses Water Quality:	Water quality assessment was conducted at Webb Creek as part of SWAMP study in 2005. Continuous field monitoring at 15 minute increments of temperature, dissolved oxygen, pH and specific conductance was conducted to determine temporal variability in basic water quality at one location. The 7 day average minimum concentration of dissolved oxygen was 10.72 mg/L during dry season, 11.66 mg/L during spring season, and 11.4 mg/L during winter wet season. All DO measurements met the water quality objective of 7 mg/L.
Data Reference:	Data collected by the Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board. Years 4 and 5 Assessment
Water Quality Objective/Criterion:	The numeric water quality objective for dissolved oxygen is 7.0 mg/L minimum for waters designated as cold water habitat. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
Objective/Criterion Reference:	San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)
Spatial Representation:	Dissolved oxygen concentrations were measured at one site located just upstream from Hwy 1.
Temporal Representation:	DO was recorded at 15 minute intervals over 6 to 7 days during spring (April 2005), summer dry season (August 2005), and winter wet season (January 2006).
Environmental Conditions:	
QAPP Information:	All samples were collected and analyzed using procedures comparable with the SWAMP Quality Assurance Management Plan (SWRCB 2002).